

Remarks

Claims 2, 3, and 5-8 are pending in the subject application. By this Amendment, claims 2, 3, 5, and 6 have been amended. In particular, claim 2 has been amended to recite “a photo image sensor to detect a generally cross-sectional image of the slurry flowing in the by-pass, and to display sizes of particles included in the detected cross-sectional image and a particle density of the slurry across a cross-section of the by-pass;” claim 5 has been amended to recite “capturing with a photo image sensor a cross-sectional image of the by-pass in which the slurry flows and displaying sizes of particles included in the captured cross-sectional image and a particle density of the slurry across a cross-section of the by-pass;” and claims 3 and 6 have been amended to remove “or a solution with the same composition as the slurry solution.” Support for the amendments to claims 2 and 5 can be found, at least, at paragraph [0018]. No new matter has been introduced by these amendments. Upon entry of these amendments, claims 2, 3, and 5-8 will be before the Examiner. Favorable consideration of the pending claims is respectfully requested.

The rejections of claims 3 and 6 under 35 U.S.C. § 112, second paragraph, have been obviated by the above amendment.

Claims 2, 3, 5, 7 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kondo *et al.* (U.S. Pat. App. No. 2002/0061722). Applicant respectfully traverses. The Office Action states at page 3 that Kondo discloses that the solution is diluted after being removed from the main supply line and prior to passing through the sensor, thus a diluent solution must inherently be provided to the by-pass (561) from a diluent solution supply unit in order to dilute the solution at a point between the main supply line and the sensor. However, Kondo fails to teach or suggest supplying diluent to a bypass. Specifically, Kondo teaches at paragraph [0003] of the background section, removing a sample from the polishing apparatus because if the polishing solution is directly measured on the production line, it’s not accurately measured. Then, in describing Kondo’s invention, Kondo teaches using a bypass and analyzing the slurry without describing needing dilution. In particular, Kondo uses a sensor that doesn’t require dilution. For example, Fig. 3(a) does not show enough fluctuations of voltage values. It could have shown more fluctuations if the slurry was diluted. The lack of frequent fluctuations in the curve indicates that the slurry is not diluted. Therefore, adding a diluent solution to the bypass is not inherent.

Furthermore, the Office Action states at page 4 that Kondo's sensor inherently produces some form of image of the cross-section that is analyzed. However, Kondo teaches a particle detector that is a light-extinction type and adapted for irradiating a predetermined quantity of light on a flow cell fitted in the bypass conduit so as to detect an attenuation of the light transmitted through the polishing solution flowing through the flow cell, which is not an image. Rather, the result is a voltage fluctuation seen perpendicular to the flow direction. See Kondo Fig. 2, paragraphs [0011], [0015], [0018], and Fig. 3.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103(a) rejection of claims 2, 3, 5, 7 and 8.

Claims 2, 3, 5, 7 and 8 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kondo *et al.* (U.S. Pat. App. No. 2002/0061722) in view of Grant *et al.* (U.S. Pat. App. No. 2003/0174306). Applicant respectfully requests reconsideration. Claim 2 has been amended to recite "a photo image sensor to detect a generally cross-sectional image of the slurry flowing in the by-pass, and to display sizes of particles included in the detected cross-sectional image and a particle density of the slurry across a cross-section of the by-pass;" and claim 5 has been amended to recite "capturing with a photo image sensor a cross-sectional image of the by-pass in which the slurry flows and displaying sizes of particles included in the captured cross-sectional image and a particle density of the slurry across a cross-section of the by-pass;".

Kondo *et al.* and Grant *et al.*, alone or in combination, fail to teach or suggest a photo image sensor detecting a generally cross-sectional image of slurry flowing in the by-pass, displaying sizes of particles included in the captured image and a particle density of the slurry across a cross-section of the by-pass, and then using a slurry measuring unit to analyze the image captured by the photo image sensor. In particular, Kondo *et al.* teaches that the particle detector is a light-extinction type and adapted for irradiating a predetermined quantity of light on a flow cell fitted in the by-pass conduit so as to detect an attenuation of the light transmitted through the polishing solution flowing through the flow cell (*see* Kondo *et al.* at Fig. 2 and paragraphs [0011], [0015], and [0018]).

Furthermore, the particle detector 7 of Kondo *et al.* includes a light detecting device such as a photodiode for detecting an intensity of the light emitted from the light source 72 and transmitted through the flow cell 74 (*see* Kondo *et al.* at paragraph [0048]). Therefore, the particle detector 7 of Kondo *et al.* does not analyze the cross-sectional image captured by the photo image sensor to

measure the sizes of particles included in the slurry and the density of the slurry across the cross-section of the by-pass. Grant *et al.* does not cure these defects.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the §103(a) rejection of claims 2, 3, 5, 7 and 8.

In view of the foregoing remarks and amendments to the claims, Applicant believes that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

Applicant invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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